REMARKS

Claims 1-8 and 10-64 remain in the application for consideration. In view of the following remarks, Applicant respectfully requests withdrawal of the rejections and forwarding of the application onto issuance.

§103 Rejections

Claims 1-8, 10-19, 24-28, 30-31, 37-43, 48-49, and 54-64 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,295,261 to Simonetti in view of U.S. Patent No. 6,470,344 to Kothuri et al. (hereinafter "Kothuri").

Claims 20-23, 29, 32-36, 44-47, and 50-53 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Simonetti and Kothuri in view of U.S. Patent No. 6,151,601 to Papierniak et al. (hereinafter "Papierniak").

Before discussing the substance of the Office's rejections, a discussion of Simonetti and Kothuri is provided below to assist the Office in appreciating patentable distinctions between the Applicant's claimed embodiments and the cited references. Before discussing these references, however, a short discussion of the §103 standard is provided.

The §103 Standard

In making out a §103 rejection, the Federal Circuit has stated that when one or more reference or source of prior art is required in establishing obviousness, "it is necessary to ascertain whether the prior art *teachings* would appear to be sufficient to one of ordinary skill in the art to suggest making the claimed substitutions or other modification." *In re Fine,* 5 USPQ 2d, 1596, 1598 (Fed. Cir.

1988). That is, to make out a *prima facie* case of obviousness, the references must be examined to ascertain whether the combined *teachings* render the claimed subject matter obvious. *In re Wood*, 202 USPQ 171, 174 (C.C.P.A. 1979).

Moreover, there is a requirement that there must be some reason, suggestion, or motivation *from the prior art*, as a whole, for the person of ordinary skill to have combined or modified the references. *See, In re Geiger,* 2 USPQ 2d 1276, 1278 (Fed. Cir. 1987). Additionally, *particular findings* must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *See, e.g., In Re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000).

It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fritch,* 23 USPQ 2d 1780, 1784 (Fed. Cir. 1992).

A factor cutting against a finding of motivation to combine or modify the prior art is when the prior art *teaches away* from the claimed combination. A reference is said to teach away when a person or ordinary skill, upon reading the reference, would be led in a direction divergent from the path that the applicant took. *In re Gurley*, 31 USPQ 2d 1130, 1131 (Fed. Cir 1994).

In order for a *prima facie* case of obviousness to be made, the resulting combination or motivation must appear to show or suggest the claimed invention. *In re Nielson*, 2 USPQ 2d1525, 1528 (Fed. Cir. 1987).

In view of the standard for establishing a *prima facie* case of obviousness, Applicant respectfully disagrees with the Office's rejections of the present claims and submits that the Office has not established a *prima facie* case of obviousness.

The Simonetti Reference

Simonetti discloses a database structure in which the fields of each database record are divided into two classes – navigational and information data. The data in the navigational fields is stored in a topological map which may be viewed as a tree structure or the merger of two or more tree structures. The informational data is stored in a conventional relational database.

Simonetti's system can best be appreciated from its Figs. 2A, 2B, and 2C. Simonetti's database includes two types of data which are stored and searched in different manners. The first type of data is navigational data and comprises the hierarchically organized data. The navigational data is stored in one or more tree structures. The remaining data is so-called informational data. The informational data is stored in a relational type database.

Fig. 2 illustrates the conversion of a conventional database 10 (Fig. 1A) into a database according to Simonetti's disclosure. The hierarchical data is located in columns 31-33 as shown in Fig. 2(A). The informational data columns are shown at 34.

The database is then split into two tables 41 and 42 as shown in Fig. 2(B). Table 41 contains the navigational data and table 42 contains the informational data. An additional field is added to each record in each table. This field is shown in columns 43 and 44. A unique identifier is assigned to each record in the database. The value of this identifier is placed in these additional fields. Hence,

column 43 is identical to column 44. This unique identifier provides a means for identifying the informational data record in table 42 that is associated with each record in navigational table 41.

The final step of converting the database consists of replacing table 41 by a tree structure 50 as shown in Fig. 2(C). The nodes in tree structure 50 are divided into sets shown at 51-54. Each set of nodes corresponds to a column in table 41. The nodes in set 51 correspond to the state, those in set 52 correspond to the city, those in set 53 correspond to the street address, and *those in set 54 correspond to the unique identifier defined for each record in the original database*. Each node in a given set is linked to a node in a set one level higher up in the hierarchy. For example, by traversing the tree from any given city node to the state node to which it is linked, one may ascertain the state in which the city is located.

Tree structure 50 may be used to select all informational data records corresponding to a particular query stated in terms of the navigational data. For example, to find all records in which the customer was located in a given city, tree structure 50 is accessed at the city level and the node corresponding to the city in question found. *The node is then traced via its links to the unique identifier at level 54*. The unique identifiers are then used to access the informational data in table 42.

That is, Simonetti's hierarchical tree has only one level (level 54) which contains a unique identifier. In order to ascertain the unique identifier, one starts at an upstream node (such as one at the city or state level) and traverses down to the very bottom of the tree where the unique identifier is located. Individual nodes in Simonetti's tree, other than those nodes at the very bottom of the tree, are likely associated with multiple different unique identifiers. For example, each of the

nodes at level 53 is associated with multiple different unique identifiers from level 54. Each of the nodes at level 52 is associated with even more unique identifiers.

The Kothuri Reference

Kothuri discloses a set of multi-dimensional/multi-attribute data items that are indexed by recursively clustering the data items into smaller collections until each cluster can be stored (i.e., indexed) in a single leaf node of a hierarchical (e.g., tree-structured) index. In particular, when the set of data items--or a subset thereof--is too large to fit in a single leaf node, a suitable dimension/attribute by which to divide the data items is selected and the set or subset is divided accordingly. The capacity of a node may be specified as a fanout characteristic of the index or may be determined by a parameter of a suitable physical storage device (e.g., the capacity of a disk page).

The selected dimension or attribute in which to divide a data set or subset may be the one having data item values exhibiting the greatest variance or range. Alternatively, a dimension may be selected based upon an expected or specified query pattern. Illustratively, when a dividing dimension is selected, the data items are sorted in that dimension and then divided into two or more subsets that contain equal or nearly equal numbers of data items. After leaf nodes are constructed for clusters of data items, intermediate nodes and, finally, a root node may be constructed to complete the index. Each higher-level node is designed to encompass or contain its children nodes.

A hierarchical index (e.g., an R-tree index) constructed to contain multi-dimensional or multi-attribute data may be stored in a database environment--such as a relational database management system. In one embodiment, a first object or

table in a database is configured to store information concerning the index (e.g., its dimensionality, fanout) and possibly an identifier (e.g., an address or storage location, a unique node identity) of a root node of the index. A second object or table is configured to store a record or row for each node of the index. The multi-dimensional data items may be stored in one or more objects or tables, in the same or a different database.

In the second object or table mentioned above, each record for an index node may consist of items such as: a unique identifier of the corresponding node, an identifier of a parent node, an identifier of a sibling node, a measure of the number of children of the node, and an entry for each child. In one embodiment, each entry for a child node includes an identifier of the child, which may be a data item (if the node is a leaf node) or another node. Illustratively, each index record also includes a bounding region or area that encompasses the data item (if the node is a leaf node) or all data items that descend from the node (i.e., all data items below the node that are connected to the node through one or more intervening nodes).

The Claimed Subject Matter

Claim 1 recites a system for determining context comprising:

- one or more computer-readable media; and
- a hierarchical tree structure resident on the media and comprising multiple nodes each of which represent geographical divisions of the Earth, individual nodes comprising an entity identification (EID) that is unique to the node, EIDs serving as a basis by which attributes can be assigned to goods or services associated with an individual node, said multiple nodes comprising parent and children nodes, at least

some of the parent nodes and their associated children nodes having EIDs that are unique for the associated node.

In making out the rejection of this claim, the Office argues, *inter alia,* that Simonetti does not disclose a system in which at least some of the parent nodes and their associated children node have EIDs that are unique for the associated node. Applicant agrees.

The Office then goes onto rely on Kothuri as disclosing unique identifiers associated with parent and children nodes. Based on this, the Office argues that the subject matter of this claim would be obvious in view of these two references. Specifically, the Office argues that it would be obvious to combine the teachings of Simonetti and Kothuri so as to obtain a unique identifier for the associated node. As a motivation to combine these teachings, the Office reasons that such combination would "have a system that provides for effective management of data that are inherently multi-dimensional...and each higher-level node is designated to encompass or contain its children nodes." See, Office Action, page 4. Further, the Office reasons that "this system has a way to improve the searching and retrieving a tree structure...and optimization for search on a plurality of search values without the need to generate and store search table for each search value values."

Applicant respectfully but strongly disagrees with the Office and submits that the Office has failed to establish a *prima facie* case of obviousness for a number of different reasons. Accordingly, Applicant respectfully traverses the Office's rejection.

First, the Office's attempted modification of Simonetti is in direct contravention with Simonetti's teachings. That is, there is no motivation whatsoever in Simonetti to support the Office's attempted modification. In point

of fact, *Simonetti teaches directly away* from any such modification. As the Office will surely appreciate, teaching away is the antithesis of a motivation to combine. Specifically, Simonetti teaches a system, as seen in Fig. 2C, in which only its lowest tree level 54 has nodes that are associated with a unique identifier. In accordance with Simonetti's system, and as described in Simonetti's specification, a final step of converting an associated database consists of replacing table 41 by a tree structure 50 as shown in Fig. 2(C). The nodes in tree structure 50 are divided into sets shown at 51-54. Each set of nodes corresponds to a column in table 41. The nodes in set 51 correspond to the state, those in set 52 correspond to the city, those in set 53 correspond to the street address, and ***those in set 54 correspond to the unique identifier defined for each record in the original database.*** Each node in a given set is linked to a node in a set one level higher up in the hierarchy. For example, by traversing the tree from any given city node to the state node to which it is linked, one may ascertain the state in which the city is located.

Simonetti does not contemplate or even remotely suggest nodes other than the nodes appearing in the lowest level 54, as having a unique identifier. Rather, a unique identifier is ascertained by traversing down the tree from a node at a higher level to ascertain the unique identifier of a node or nodes at level 54. It is unclear, at best, how Simonetti's system would work, if it would work at all, if both parent and children nodes were to each have their own unique identifiers.

Second, the Office's stated motivation to combine Simonetti and Kothuri does not seem to make much sense in Simonetti's context. That is, Simonetti's system appears to have been developed for a specific reason and presents a specific approach to solving its problem. There is nothing that Applicant can

ascertain, from a fairly thorough reading of Simonetti, why one might be motivated to change its specifically architected approach. Further, modifying Simonetti, as suggested by the Office, would appear to jeopardize Simonetti's functionality insofar as its specifically architected solution solves its database conversion problem.

Third, the Office has not made *particular findings* as to the reason why the skilled artisan, with no knowledge of the claimed subject matter, would have selected these references for combination in the manner claimed. That is, it appears the Office has used Applicant's disclosure as a template, using hindsight reconstruction, to pick and choose items from the prior art to take the position that the subject matter of claim 1 is obvious. As the Office surely appreciates, hindsight reconstruction has been specifically proscribed by the Federal Circuit.

For all of the reasons set forth above, claim 1 is allowable.

Claims 2-8, and 10-23 depend from claim 1 and are allowable as depending from an allowable base claim. These claims are also allowable for their own recited features which, in combination with those recited in claim 1, are neither disclosed nor suggested in the references of record, either singly or in combination with one another. Given the allowability of these claims, the rejection of claims 20-23 over the combination with Papierniak is not seen to add anything of significance.

Claim 24 recites a system for determining context comprising:

- one or more computer-readable media;
- a first hierarchical tree structure having multiple nodes associated with a first context;
- at least one second hierarchical tree structure having multiple nodes associated with a second context; and

at least one node from the at least one second hierarchical tree structure being linked with one node on the first hierarchical tree structure by a link that is configured to enable a complete context to be derived from the first and second contexts, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services,

- said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node.

In making out the rejection of this claim, the Office essentially relies on Simonetti and Kothuri, and uses the same rationale that it used to make out the rejection of claim 1. For all of the reasons set forth above with respect to the Office's failure to make out a *prima facie* case of obviousness, this claim is allowable. Accordingly, Applicant respectfully traverses the Office's rejection.

Claims 25-36 depend from claim 24 and are allowable as depending from an allowable base claim. These claims are also allowable for their own recited features which, in combination with those recited in claim 24, are neither disclosed nor suggested in the references of record, either singly or in combination with one another. In addition, given the allowability of these claims, the rejection of claims 29 and 32-36 over the combination with Papierniak is not seen to add anything of significance.

Claim 37 recites a method of determining context comprising:

- accessing first and one or more second hierarchical tree structures that are resident on one or more computer-readable media, each tree structure having multiple nodes, the nodes of the first hierarchical tree structure being associated with a first context, the nodes of the one or more second hierarchical tree structures being associated with a second context; and
traversing multiple nodes of at least one of the tree structures to derive a context, individual nodes having unique IDs that can serve

as a basis by which attributes can be assigned to goods or services, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node.

In making out the rejection of this claim, the Office essentially relies on Simonetti and Kothuri, and uses the same rationale that it used to make out the rejection of claim 1. For all of the reasons set forth above with respect to the Office's failure to make out a *prima facie* case of obviousness, this claim is allowable. Accordingly, Applicant respectfully traverses the Office's rejection.

Claims 38-47 depend from claim 37 and are allowable as depending from an allowable base claim. These claims are also allowable for their own recited features which, in combination with those recited in claim 37, are neither disclosed nor suggested in the references of record, either singly or in combination with one another. In addition, given the allowability of these claims, the rejection of claims 44-47 over the combination with Papierniak is not seen to add anything of significance.

Claim 48 is directed to a computer-readable medium having instructions that cause a computing device to

- access first and second hierarchical tree structures, each tree structure having multiple nodes, the nodes of the first hierarchical tree structure being associated with a first location context, the nodes of the second hierarchical tree structure being associated with a second location context, at least one node of the second hierarchical tree structure being linked with a node of the first hierarchical tree structure; and
- traverse at least one node of each tree structure to derive a location context, at least one node in a traversal path that leads to a root node of the second hierarchical tree structure being linked with a node of the first hierarchical tree structure, individual nodes having unique

IDs that can serve as a basis by which attributes can be assigned to goods or services, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node.

In making out the rejection of this claim, the Office essentially relies on Simonetti and Kothuri, and uses the same rationale that it used to make out the rejection of claim 1. For all of the reasons set forth above with respect to the Office's failure to make out a *prima facie* case of obviousness, this claim is allowable. Accordingly, Applicant respectfully traverses the Office's rejection.

Claims 49-53 depend from claim 48 and are allowable as depending from an allowable base claim. These claims are also allowable for their own recited features which, in combination with those recited in claim 48, are neither disclosed nor suggested in the references of record, either singly or in combination with one another. In addition, given the allowability of these claims, the rejection of claims 50-53 over the combination with Papierniak is not seen to add anything of significance.

Claim 54 recites a method of locating goods or services comprising:

- defining a hierarchical tree structure comprising multiple nodes that each can define a physical or logical entity, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node;
- associating one or more goods or services with one or more of the nodes; and
- traversing one or more of the multiple nodes to discover a good or service.

In making out the rejection of this claim, the Office essentially relies on Simonetti and Kothuri, and uses the same rationale that it used to make out the rejection of claim 1. For all of the reasons set forth above with respect to the Office's failure to make out a *prima facie* case of obviousness, this claim is allowable. Accordingly, Applicant respectfully traverses the Office's rejection.

Claims 55-56 depend from claim 54 and are allowable as depending from an allowable base claim. These claims are also allowable for their own recited features which, in combination with those recited in claim 54, are neither disclosed nor suggested in the references of record, either singly or in combination with one another.

Claim 57 is a computer-readable medium claim and is of comparable scope to claim 54. Hence, for all of the reasons set forth with respect to claim 54 being allowable, this claim is allowable. Accordingly, Applicant respectfully traverses the Office's rejection.

Claim 58 recites a method of building context-aware data structures

- receiving input from a source that specifies information pertaining to physical and/or logical entities;
- processing the information to define a hierarchical tree structure having a context, the tree structure comprising multiple nodes each of which represent a separate physical or logical entity, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node;
- linking at least one of the multiple nodes to a node of another tree structure having a context and multiple nodes that represent physical and/or logical entities, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services,
- the tree structures being configured for traversal in a manner that enables context to be derived from one or more of the nodes.

In making out the rejection of this claim, the Office essentially relies on Simonetti and Kothuri, and uses the same rationale that it used to make out the rejection of claim 1. For all of the reasons set forth above with respect to the Office's failure to make out a *prima facie* case of obviousness, this claim is allowable. Accordingly, Applicant respectfully traverses the Office's rejection.

Claims 59-60 depend from claim 58 and are allowable as depending from an allowable base claim. These claims are also allowable for their own recited features which, in combination with those recited in claim 58, are neither disclosed nor suggested in the references of record, either singly or in combination with one another.

Claim 61 recites a system for determining context comprising:

- one or more computer-readable media; and
- a hierarchical tree structure resident on the media and comprising multiple nodes each of which represent geographical divisions of the Earth, individual nodes comprising an entity identification (EID) that is unique to the node, EIDs serving as a basis by which attributes can be assigned to goods or services associated with an individual node, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having EIDs that are unique for the associated node;
- wherein at least some of the nodes comprise a node selected from a group of nodes comprising: political entities, natural entities, infrastructure entities, and public places.

In making out the rejection of this claim, the Office essentially relies on Simonetti and Kothuri, and uses the same rationale that it used to make out the

rejection of claim 1. For all of the reasons set forth above with respect to the Office's failure to make out a *prima facie* case of obviousness, this claim is allowable. Accordingly, Applicant respectfully traverses the Office's rejection.

Claim 62 recites a system for determining context comprising:

- one or more computer-readable media;
- a first hierarchical tree structure having multiple nodes associated with a first context;
- at least one second hierarchical tree structure having multiple nodes associated with a second context; and
- at least one node from the at least one second hierarchical tree structure being linked with one node on the first hierarchical tree structure by a link that is configured to enable a complete context to be derived from the first and second contexts, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services,
- said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node;
- wherein the nodes of the first hierarchical tree structure comprise geographical divisions of the Earth;
- wherein the first and the at least one second hierarchical tree structures comprise a plurality of attributes, one of which comprising information that pertains to the tree with which the node is associated.

In making out the rejection of this claim, the Office essentially relies on Simonetti and Kothuri, and uses the same rationale that it used to make out the rejection of claim 1. For all of the reasons set forth above with respect to the Office's failure to make out a *prima facie* case of obviousness, this claim is allowable. Accordingly, Applicant respectfully traverses the Office's rejection.

Claim 63 recites a computer-implemented method of determining context comprising:

accessing first and one or more second hierarchical tree structures that are resident on one or more computer-readable media, each tree structure having multiple nodes, the nodes of the first hierarchical tree structure being associated with a first context, the nodes of the one or more second hierarchical tree structures being associated with a second context; and

- traversing multiple nodes of at least one of the tree structures to derive a context, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services, *said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node*;

- wherein the nodes of the first hierarchical tree comprise geographical divisions of the Earth; and

- wherein the traversing comprises traversing at least one node on each tree to derive the context.

In making out the rejection of this claim, the Office essentially relies on Simonetti and Kothuri, and uses the same rationale that it used to make out the rejection of claim 1. For all of the reasons set forth above with respect to the Office's failure to make out a *prima facie* case of obviousness, this claim is allowable. Accordingly, Applicant respectfully traverses the Office's rejection.

Claim 64 recites one or more computer-readable media having computer-readable instructions thereon which, when executed by a handheld, mobile computing device, cause the computing device to:

- access first and second hierarchical tree structures, each tree structure having multiple nodes, the nodes of the first hierarchical tree structure being associated with a first location context, the nodes of the second hierarchical tree structure being associated with a second location context, at least one node of the second hierarchical tree structure being linked with a node of the first hierarchical tree structure; and

traverse at least one node of each tree structure to derive a location context, at least one node in a traversal path that leads to a root node of the second hierarchical tree structure being linked with a node of the first hierarchical tree structure, individual nodes having unique IDs that can serve as a basis by which attributes can be assigned to goods or services, said multiple nodes comprising parent and children nodes, at least some of the parent nodes and their associated children nodes having IDs that are unique for the associated node.

In making out the rejection of this claim, the Office essentially relies on Simonetti and Kothuri, and uses the same rationale that it used to make out the rejection of claim 1. For all of the reasons set forth above with respect to the Office's failure to make out a *prima facie* case of obviousness, this claim is allowable. Accordingly, Applicant respectfully traverses the Office's rejection.

Conclusion

All of the claims are in condition for allowance. Applicant respectfully requests a Notice of Allowability be issued forthwith. If the Office's next anticipated action is to be anything other than issuance of a Notice of Allowability, Applicant respectfully requests a telephone call for the purpose of scheduling an interview.

Respectfully Submitted,

Dated: 9/8/03   By: _____
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